Missouri Economic Profile

LIFE SCIENCES

Missouri Life Science Funding

Life sciences includes any of the several branches of science dealing with the study of living organisms and their organization, life processes, and relationships to each other and their environment. Missouri's life science industry consists of companies or institutions that actively engage in research and development within life sciences, directly support research and development activities within life sciences, and/or develop applications of that knowledge to improve our way of life. This economic profile looks at funding sources for companies involved in the research and development of new life science methods and technologies in Missouri.

Federal Research Funding

Much of the funding for life science research in Missouri comes from three sources: the National Institutes of Health (NIH); Small Business Innovation Research (SBIR) grants; and Small Business Technology Transfer (STTR) grants.

The National Institutes of Health, a part of the U.S. Department of Health and Human Services, is the primary Federal agency for conducting and supporting medical research.

Missouri's Research Funding Sources

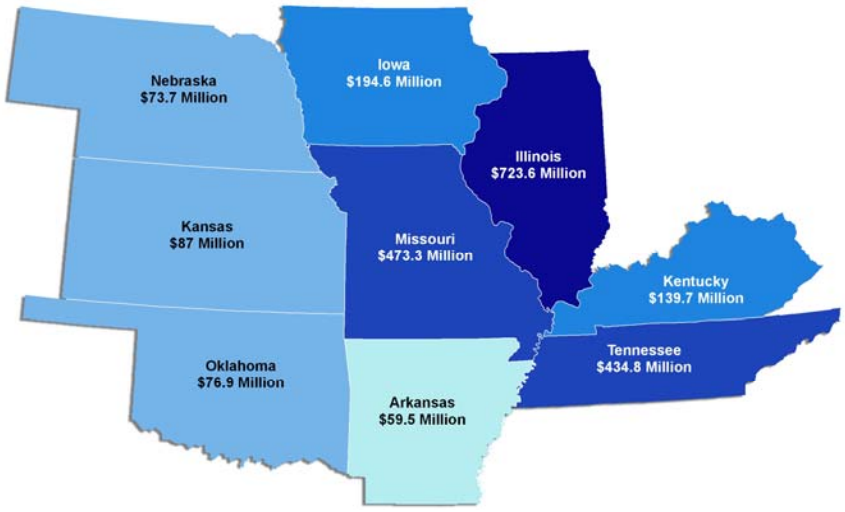
Source	2007($M)	Rank*
NIH	$473	2
SBIR	$5	2
STTR	$1.2	2
Venture Cap.	$15.4	3

*Rank based on surrounding states.

The SBIR and STTR programs are reserved for small businesses, with the STTR **requiring** the small business to partner with a research institution (e.g., university). Eleven federal departments set aside research and development funds for the SBIR, while five federal departments set aside funds for the STTR.

NIH Grants

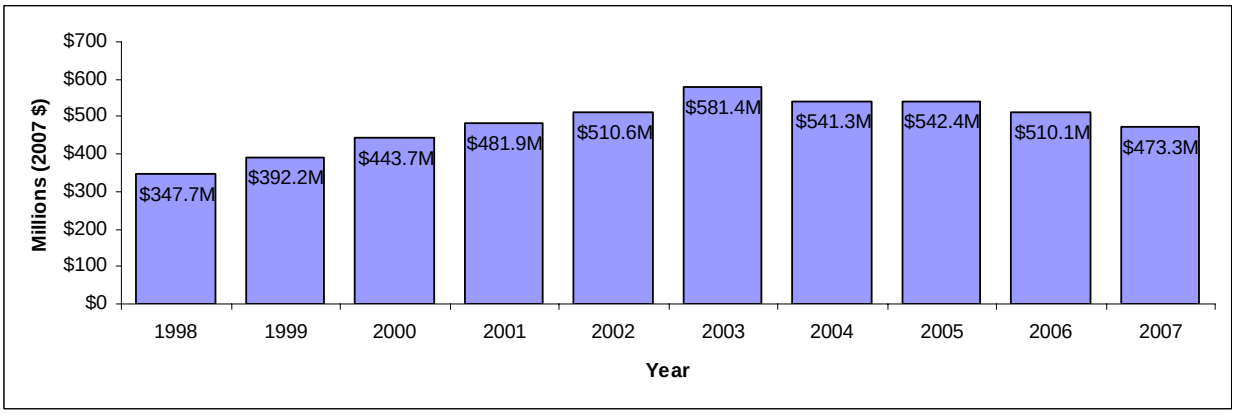
NIH is the steward of medical and behavioral research for the Nation. Its mission is science in pursuit of fundamental knowledge about the nature and behavior of living systems and the application of that knowledge to extend healthy life and reduce the burdens of illness and disability. Composed of 27 Institutes and Centers, the NIH provides leadership and financial support to researchers in every state and throughout the world. A list of the NIH Institutes is included in the **NOTES** section.



Life science research programs in Missouri were awarded $473.3 million in 2007 through NIH grants. Missouri ranks second to Illinois among neighboring states in the amount of life science research grants awarded through NIH.

NIH grants awarded for life science research in Missouri increased gradually from $347.7 million in 1998 and peaked at $581.4 million in 2003. Between 2003 and 2007, the NIH grants awarded for life science research in Missouri declined by 18.59% to $473.3 million. Over the same time period, nationwide NIH grants decreased by 12.11%

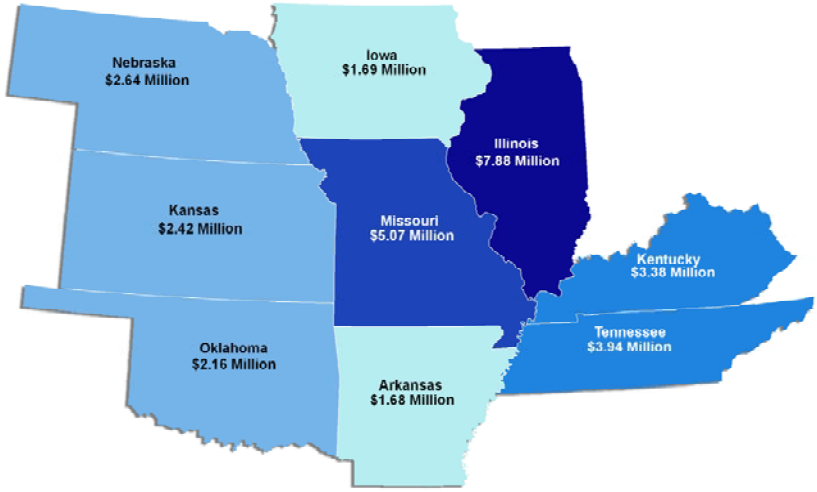
Chart 1. NIH Grants, 1998 – 2007



Source: National Institutes of Health

Small Business Innovation Research (SBIR)

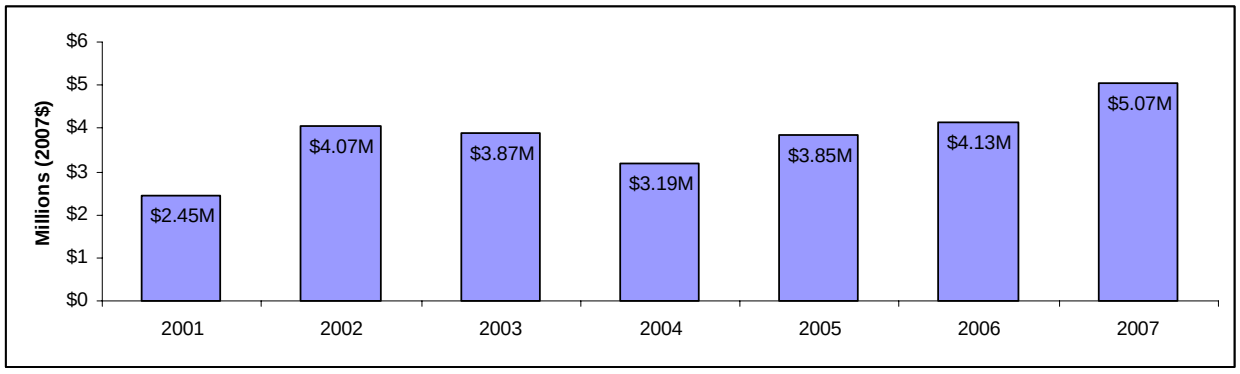
Small Business Innovation Research (SBIR) program is administered by the U.S. Small Business Administration (SBA) to encourage small businesses to realize their technological potential and provides incentives for commercialization. By targeting the entrepreneurial sector, the SBIR program stimulates innovation by providing opportunities for research and development grants and awards. Eleven federal departments participate in the SBIR program.



Missouri life science companies were awarded over $5.07 million in grants through SBIR program in 2007. Missouri ranks second to Illinois among neighboring states in the amount of grants awarded to life science research through SBIR program.

The life science research grants awarded through SBIR increased over 22% from 2006 to 2007 and more than doubled from 2001 to 2007. SBIR funding increased steadily from $3.19 million in 2004 to $5.07 million in 2007.

Chart 2. SBIR Life Science Funding in Missouri



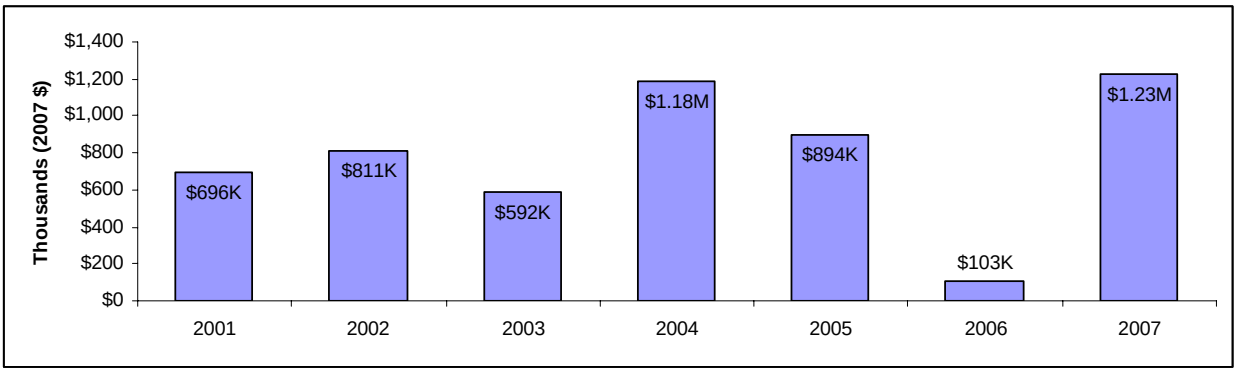
Source: United States Small Business Administration

Small Business Technology Transfer (STTR)

Small Business Technology Transfer (STTR) is an important program that expands funding opportunities in the federal innovation research and development arena. Central to the program is expansion of the public/private sector partnerships to include the joint venture opportunities for small businesses and the nation's premier nonprofit research institutions. STTR's goal is to foster the innovation necessary to meet the nation's scientific and technological challenges in the 21st century. Five federal departments participate in the STTR program.

In terms of STTR funding for life science research, Missouri ($1.23 million) ranks third among neighboring states following Kentucky ($1.33 million) and Iowa ($1.24 million).

Chart 3. STTR Life Science Funding in Missouri



Source: United States Small Business Administration

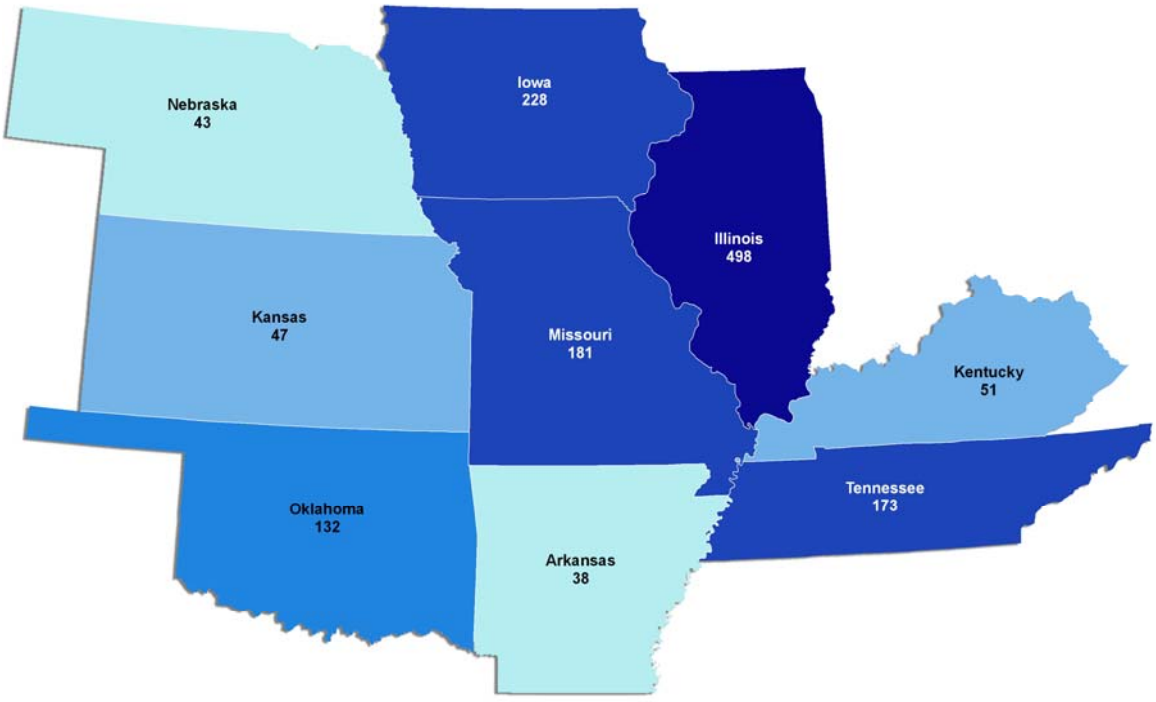
Life science research funding in Missouri through STTR almost doubled from 2001 to 2007. STTR funding decreased steadily from 2004 to 2006 but increased drastically by almost twelve times from $103,000 in 2006 to $1.23 million in 2007.

Missouri Life Science Patents

Life Science knowledge clusters, identified by MERIC, include the following:

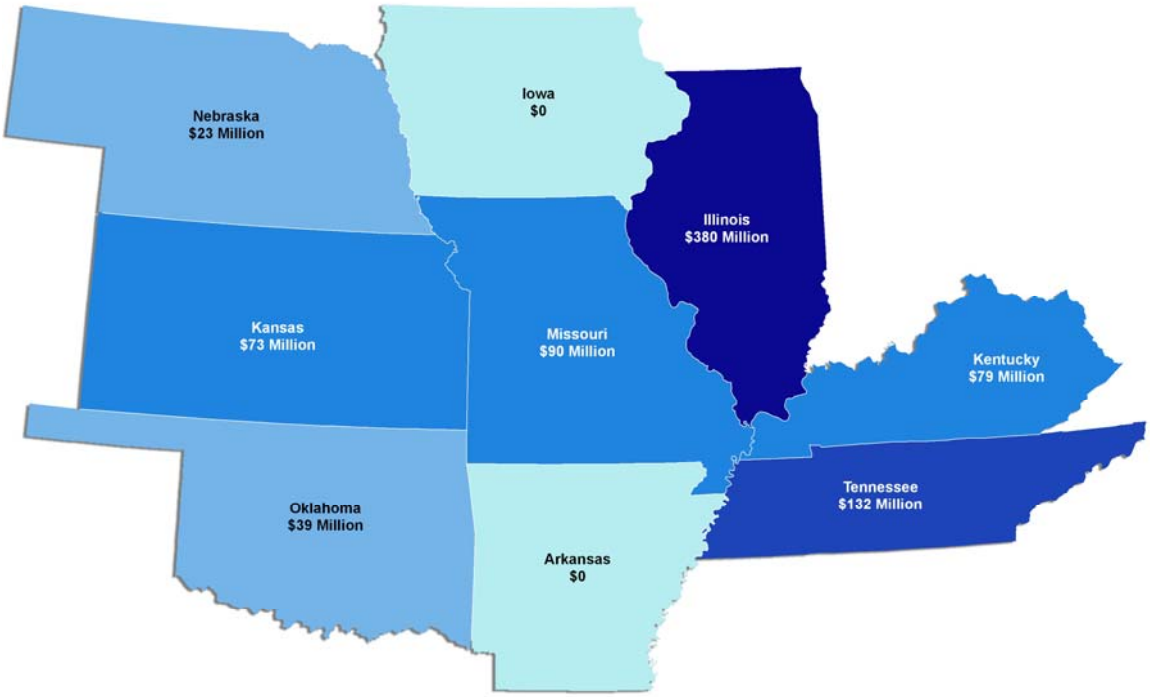
1. *Organic Pharmaceutical Chemistry and Manufacturing*
2. *Inorganic and Synthetic Pharmaceutical Chemistry and Manufacturing*
3. *Surgical Processes, Techniques and Apparatus*
4. *Materials Coating Processes*
5. *Mineral Oil and Hydrocarbon Suspension Manufacturing*
6. *Chemical Fertilizer Production*
7. *Crop Planting, Harvesting and Threshing*
8. *Synthetic Hydrocarbon Production and*
9. *Synthetic Fuel Chemistry.*

In 2006, Missouri had 181 patents in categories related to the life sciences industries. The majority of these were in Organic Pharmaceutical and Manufacturing, with a strong presence in surgical patents as well. Of the bordering states, only Iowa and Illinois had more patents related to life sciences. There were 15,343 life science patents nationwide in 2006.



Investing in Missouri – Venture Capital Investments, 2000 - 2007

As reported by the PricewatherhouseCoopers MoneyTree™ Report, Missouri took in a total of $90 million from 27 deals made in Biotechnology venture capital investments between 2000 and 2007. This figure puts it at 3rd when compared to the surrounding states, behind Illinois and Tennessee.



Sources

1. National Institutes of Health (www.nih.gov)
2. PricewaterhouseCoopers & National Venture Capital Association, *"MoneyTree™ Report"* (data provided by Thomson Financial)
3. U.S. Patent and Trademark Office (www.uspto.gov)
4. MERIC, *"Knowledge Clusters – Rivals in Innovation: The Life Sciences Industry"*
5. MERIC, *"Innovation Clusters in the Decade of the 1990s"*
6. U.S. Small Business Association (www.sba.gov)

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Notes

The definition of "life sciences" was derived from the Missouri Life Sciences Industry Leadership Council.

Patent categories for the Life Science industries were identified in *"Knowledge Clusters – Rivals in Innovation: The Life Sciences Industry."* MERIC analyzed the U.S. Patent and Trademark Office data for all of the patents issued to originators within the 318 Metropolitan Statistical Areas (MSA) in the U.S. between 1995 and 1999 to determine (1) what groups of patent classes constitute a knowledge cluster, (2) which knowledge clusters Missouri's MSAs compete well in, and (3) which MSAs are in direct competition with St. Louis and Kansas City in the generation of new knowledge. Nine knowledge clusters were identified in life sciences and organic chemicals production.

The MoneyTree™ definition of the Biotechnology industry is as follows: *"Developers of technology promoting drug development, disease treatment, and a deeper understanding of living organisms. Includes human, animal, and industrial biotechnology products and services. Also included are biosensors, biotechnology equipment, and pharmaceuticals."*

NIH Institutes

National Cancer Institute
National Eye Institute
National Heart, Lung, and Blood Institute
National Human Genome Research Institute
National Institute on Aging
National Institute on Alcohol Abuse and Alcoholism
National Institute of Allergy and Infectious Diseases
National Institute of Arthritis and Musculoskeletal and Skin Diseases
National Institute of Biomedical Imaging and Bioengineering
National Institute of Child Health and Human Development
National Institute of on Deafness and Other Communication Disorders
National Institute of Dental and Craniofacial Research
National Institute of Diabetes and Digestive and Kidney Diseases
National Institute on Drug Abuse
National Institute of Environmental Health Sciences
National Institute of General Medical Sciences
National Institute of Mental Health
National Institute of Neurological Disorders and Stroke
National Institute of Nursing Research
National Library of Medicine
Center for Information Technology
Center for Scientific Review
John E. Fogarty International Center for Advanced Study in the Health Sciences
National Center for Complementary and Alternative Medicine
National Center on Minority Health and Health Disparities
National Center for Research Resources
NIH Clinical Center

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